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09/744,230	03/21/2001	Wouter Cornelis Puijk	PEPSCAN-1(P1	3929

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EXAMINER	
YANG, NELSON C	

ART UNIT	PAPER NUMBER
1641	

DATE MAILED: 09/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/744,230	PUIJK, WOUTER CORNELIS	
	Examiner	Art Unit	
	Nelson Yang	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 22-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 22-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment of claims 1, 3, 6, 8, 11-13 is acknowledged and has been entered.

2. Applicant's addition of claims 22-29 is acknowledged and has been entered.

3. Claims 1-13, 22-29 are currently pending.

Specification

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: support in the disclosure could not be found for a carrier base having a surface roughness in the order of magnitude of atomic roughness.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-13, 22-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. The limitation of "a preparation carrier suitable for use in chemical and biochemical research" in claim 1 renders the claim ambiguous, as it does not clearly define what would render the carrier suitable for use in chemical and biochemical research.

8. The term "relative" in claim 1 is a relative term which renders the claim indefinite. The term "relative" is not defined by the claim, the specification does not provide a standard for

ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In particular, it is unclear what the surface is relatively smooth to.

9. With respect to claim 8, it is unclear how thick a few atoms is, since atoms have no definite outer boundary. Furthermore, as there are different types of atoms, it is unclear which atom type is being used as the unit of measure.

10. It is unclear what unit of measure the order of atomic roughness would comprise, and no definition of how roughness is measured or unit of measure for roughness could be found in the disclosure, rendering the claim ambiguous.

11. With respect to claims 26-28, it is unclear if the volume recited refers to the matrix, or to each individual well.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Armstrong et al [US 4,233,396] in light of Yamashita et al [US 6,140,418].

With respect to claims 1, 2, 7, Armstrong et al teach a method of forming a polymer layer comprising pouring a polymerisable liquid including a photosensitive catalyst into a suitable mould, irradiating the liquid until a partially polymerised self-supporting moulded article is formed, then removing the moulded article from the mould (column 2, lines 60-68). The further

shaping of the article may be effected, for example, by vacuum forming, compression moulding, or, where the article is sufficiently flexible, by draping the article as a sheet over a mould. The article, once it has been provided with its final shape, is cured by exposing the article to a suitable radiation which may be visible light, ultra violet light or an electron beam. The radiation actuates the photosensitive catalyst which initiates copolymerisation of e.g. the ethylenically unsaturated polymer and the ethylenically unsaturated monomer, the polymer and monomer copolymerising to produce a rigid article. Alternatively, the final curing may be effected at least in part by heating the article (column 3, lines 6-25), which one of ordinary skill in the art would aid in producing smoothness in the surface of the article, as evidenced by Yamashita et al (abstract).

13. With respect to claims 3, 4, 22, 23 Armstrong et al teach groups such as COOR, where R may be an alkyl group (column 4, lines 13-27).

14. With respect to claim 5, Armstrong et al teach the presence of methyl acrylate in the carrier surface (column 4, lines 28-30).

15. With respect to claims 7, Armstrong et al teach a method of forming a polymer layer comprising pouring a polymerisable liquid including a photosensitive catalyst into a suitable mould, irradiating the liquid until a partially polymerised self-supporting moulded article is formed, then removing the moulded article from the mould.

16. With respect to claims 12, 29, Armstrong et al teach that the carrier base may be glass plates (column 5, example 1).

17. Claims 1, 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim [US 5,047,198].

With respect to claim 1, Kim et al teach a method of compression molding reinforced thermoplastic composite sheets to obtain smooth surface finishes (column 2, lines 39-43), comprising the steps of heating a composite sheet and a mold insert, placing the heated composite sheet on the mold insert, waiting for the sheet to cool, and then removing the composite sheet (column 2, lines 43-60).

18. With respect to claim 2, the material in the composite sheet is heated until it becomes molten (column 2, lines 43-46).

19. Claims 1, 13, 24, 26, 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Oldenburg et al [US 6,027,695] in light of Nishiyama et al [US 4,524,044].

With respect to claims 1, 13, Oldenburg et al, however, do teach injection molding (column 7, lines 65-67) (which one of ordinary skill of the art would realize would require chemical treatment, as evidenced by Nishiyama (columns 1-2), and would result in a smooth surface (column 1, lines 30-35)) of microtiter plates with microwells having a volume of 0.5 microliters or less (column 5, lines 40-45), and that the bottoms of the wells may be arcuate (column 6, lines 15-18), and that the walls may also be concave or convex (column 6, lines 40-46), which would require a spherical body to form. Oldenburg et al further teach that the larger the quantity of wells that can be processed, the higher the efficiency of the screening process, and therefore it is desirable to concentrate a large number of wells in each microtiter plate by using microwells rather than conventional wells (column 1, lines 61-67).

Furthermore, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranged involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Therefore it would have been obvious to one of ordinary skill in the art to have spherical microwells having a volume less than 3 μL, 1μL, or 0.1 μL in the method of forming the polymer layer of Armstrong et al, as suggested by Oldenburg et al, in order to concentrate a large number of wells in each microtiter plate in order to increase the efficiency of the screening process.

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

21. Claims 6, 8, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Armstrong et al [US 4,233,396] in light of Yamashita et al [US 6,140,418], in view of Patton [US 4,933,285].

With respect to claim 6, Armstrong et al teach a method of forming a polymer layer comprising pouring a polymerisable liquid including a photosensitive catalyst into a suitable mould, irradiating the liquid until a partially polymerised self-supporting moulded article is formed, then removing the moulded article from the mould (column 2, lines 60-68). The further shaping of the article may be effected, for example, by vacuum forming, compression moulding, or, where the article is sufficiently flexible, by draping the article as a sheet over a mould. The article, once it has been provided with its final shape, is cured by exposing the article to a suitable radiation which may be visible light, ultra violet light or an electron beam. The radiation

actuates the photosensitive catalyst which initiates copolymerisation of e.g. the ethylenically unsaturated polymer and the ethylenically unsaturated monomer, the polymer and monomer copolymerising to produce a rigid article. Alternatively, the final curing may be effected at least in part by heating the article (column 3, lines 6-25), which one of ordinary skill in the art would aid in producing smoothness in the surface of the article, as evidenced by Yamashita et al (abstract). Armstrong et al do not teach the introduction of NH_2 groups.

Patton, however, teaches treating substrates to include reactive moieties (column 4, lines 7-10) such as amino groups (column 2, lines 29-39). Patton further teaches that solid phases having reactive moieties attached to their surfaces are useful as they serve to anchor reaction products to a solid phase, permitting the unreacted multifunctional reagents in each step to be efficiently removed (column 3, lines 35-48).

Therefore, it would have been obvious to one of ordinary skill in the art to include amino groups in the method of Armstrong et al, as suggested by Patton, in order to anchor reaction products to a solid phase, permitting the unreacted multifunctional reagents in each step to be efficiently removed.

While Patton does not specify that this reduces the roughness of the carrier surface, the step of adding amino groups would inherently reduce the surface roughness, according to what applicant discloses in the specification (p.7, lines 13-20).

22. With respect to claim 8, Patton teaches multiple monolayers of effective sequential polymeric linkages comprising reactive groups (column 2, lines 1-3). Each monolayer would therefore constitute a polymerized adhesive layer.

23. With respect to claims 9, the amino groups can be introduced via amino silane linkages (column 4, lines 10-12) such as gamma-aminopropylsilane (column 4, lines 15-20).

24. With respect to claim 10, reactive moieties can be used to immobilize polymeric monolayers for use as molecular switches (column 13, lines 35-40).

25. Claims 6, 8, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al [US 5,047,198], in view of Patton [US 4,933,285].

With respect to claim 1, Kim et al teach a method of compression molding reinforced thermoplastic composite sheets to obtain smooth surface finishes (column 2, lines 39-43), comprising the steps of heating a composite sheet and a mold insert, placing the heated composite sheet on the mold insert, waiting for the sheet to cool, and then removing the composite sheet (column 2, lines 43-60). Kim et al do not teach the introduction of NH_2 groups.

Patton, however, teaches treating substrates to include reactive moieties (column 4, lines 7-10) such as amino groups (column 2, lines 29-39). Patton further teaches that solid phases having reactive moieties attached to their surfaces are useful as they serve to anchor reaction products to a solid phase, permitting the unreacted multifunctional reagents in each step to be efficiently removed (column 3, lines 35-48).

Therefore, it would have been obvious to one of ordinary skill in the art to include amino groups in the method of Kim et al, as suggested by Patton, in order to anchor reaction products to a solid phase, permitting the unreacted multifunctional reagents in each step to be efficiently removed.

While Patton does not specify that this reduces the roughness of the carrier surface, the step of adding amino groups would inherently reduce the surface roughness, according to what applicant discloses in the specification (p.7, lines 13-20).

26. With respect to claim 8, Patton teaches multiple monolayers of effective sequential polymeric linkages comprising reactive groups (column 2, lines 1-3). Each monolayer would therefore constitute a polymerized adhesive layer.

27. With respect to claims 9, the amino groups can be introduced via amino silane linkages (column 4, lines 10-12) such as gamma-aminopropylsilane (column 4, lines 15-20).

28. With respect to claim 10, reactive moieties can be used to immobilize polymeric monolayers for use as molecular switches (column 13, lines 35-40).

29. Claims 6, 8, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oldenburg et al [US 6,027,695] in view of Patton [US 4,933,285].

With respect to claim 6, Oldenburg et al teach making microtiter plates with microwells having a volume of 0.5 microliters or less (column 5, lines 40-45), and that the bottoms of the wells may be arcuate (column 6, lines 15-18), and that the walls may also be concave or convex (column 6, lines 40-46), which would require a spherical body to form. Oldenburg et al do not teach the introduction of NH_2 groups.

Patton, however, teaches treating substrates to include reactive moieties (column 4, lines 7-10) such as amino groups (column 2, lines 29-39). Patton further teaches that solid phases having reactive moieties attached to their surfaces are useful as they serve to anchor reaction products to a solid phase, permitting the unreacted multifunctional reagents in each step to be efficiently removed (column 3, lines 35-48).

Therefore, it would have been obvious to one of ordinary skill in the art to include amino groups in the method of Armstrong et al, as suggested by Patton, in order to anchor reaction products to a solid phase, permitting the unreacted multifunctional reagents in each step to be efficiently removed.

While Patton does not specify that this reduces the roughness of the carrier surface, the step of adding amino groups would inherently reduce the surface roughness, according to what applicant discloses in the specification (p.7, lines 13-20).

30. With respect to claim 8, Patton teaches multiple monolayers of effective sequential polymeric linkages comprising reactive groups (column 2, lines 1-3). Each monolayer would therefore constitute a polymerized adhesive layer.

31. With respect to claims 9, the amino groups can be introduced via amino silane linkages (column 4, lines 10-12) such as gamma-aminopropylsilane (column 4, lines 15-20).

32. With respect to claim 10, reactive moieties can be used to immobilize polymeric monolayers for use as molecular switches (column 13, lines 35-40).

33. Claims 25, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oldenburg et al [US 6,027,695].

With respect to claims 25, 28, Oldenburg et al teach making microtiter plates with microwells having a volume of 0.5 microliters or less (column 5, lines 40-45), and that the bottoms of the wells may be arcuate (column 6, lines 15-18), and that the walls may also be concave or convex (column 6, lines 40-46), which would require a spherical body to form. Oldenburg et al do not teach spherical microwells having a volume less than 0.1 μL.

However, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranged involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Oldenburg et al further teach that the larger the quantity of wells that can be processed, the higher the efficiency of the screening process, and therefore it is desirable to concentrate a large number of wells in each microtiter plate by using microwells rather than conventional wells (column 1, lines 61-67).

Therefore it would have been obvious to one of ordinary skill in the art to have spherical microwells having a volume less than 0.1 μL in the method of Oldenburg et al, through normal optimization procedures known in the art, in order to concentrate a large number of wells in each microtiter plate to increase the efficiency of the screening process.

Response to Arguments

34. Applicant's arguments with respect to claims 1-13, 22-29 have been considered but are moot in view of the new ground(s) of rejection.

It should be noted that the 103(a) rejections have been withdrawn in favor of the 102(b), as it is believed that the Armstrong et al reference teaches all the limitations recited in the claim, as discussed above. Applicant's arguments with respect to the 103(a) rejection have not been considered.

Conclusion

35. No claims are allowed.

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson Yang whose telephone number is (571) 272-0826. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long V. Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

37. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nelson Yang
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09/26/05